

Remarks

Claims 1 – 17 are pending. Favorable reconsideration is respectfully requested. Claim 1, the only independent claim has been amended to recite that the compositions prepared are HTV compositions. This same amendment has been made in the European application on the basis of which the claims were found patentable over the art.

Claims 1- 12 have been rejected under 35 U.S.C. § 103(a) over *Mathur* et al. U.S. published application 2003/0229175 (“*Mathur*”; now U.S. Patent 6,989,120 B2), in view of Schuster et al. U.S. 5,854,343 (“*Schuster*”). Applicants respectfully traverse this rejection. As discussed in the prior response, there is no evidence of any motivation to combine these references, and one skilled in the art would not be motivated to do so.

Mathur is directed to a process of mixing untreated filler (col. 1, lines 61 - 62) with organopolysiloxane to form high temperature vulcanizable rubber (HTV) (“silicone”) employing, in a first mixing stage, a twin screw extruder, and then compounding the filler/silicone mixture with silicone gum in a reciprocating single screw kneader.

Schuster is directed to a process for preparing liquid silicone rubber wherein pre-hydrophobicized filler is mixed with silicone in a multi-chamber kneading cascade where material passes from one kneading chamber to another in a direction transverse to the axes of rotation of the kneading tools. See column 2, lines 30 - 35. While discussing the background art, *Schuster* indicates that use of a reciprocating kneader for final compounding, as taught by U.S. 4,737,561, and use of a twin screw extruder, as taught by AU 91 76 256, do not allow for sufficient mixing, and suffer greatly from emissions. To alleviate the problems of the prior art, *Schuster* avoids both twin screw extruders and reciprocating kneaders, substituting for these a kneading cascade followed by a devolatilization chamber. See, e.g. column 7, lines 8 - 16.

The *Schuster* and *Mathur* references cannot properly be combined, for several reasons, as discussed below. Moreover, one skilled in the art, with these references before him, would not be directed to the presently claimed invention. The Office has stated (Office Action, page 4, ¶3) that the references are combinable because both references involve continuous processes for preparing organosiloxane compositions mixed with filler. However, merely because they share this common feature is insufficient, as a matter of law, for supporting their combination.

Combination of references has been addressed by the Federal Circuit numerous times. In the case of *In re Anita Dembiczak* and *Benson Zinbarg*, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999), the CAFC has indicated that the requirement for showing the teaching or motivation to combine references is "rigorous." *Dembiczak* at 1617. Moreover, this showing, which is rigorously required, must be "clear and particular." *Dembiczak* at 1617. See also, *C.R. Bard v. M3 Sys., Inc.*, 48 U.S.P.Q.2d 1225, 1232 (Fed. Cir. 1998). It is well established that merely because references can be combined, the mere suitability for logical combination does not provide motivation for the combination. See, *Berghauser v. Dann*, *Comr. Pats.*, 204 U.S.P.Q. 398 (DCDC 1979); *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929 (Fed. Cir. 1984). Moreover, mere conclusory statements supporting the proposed combination, standing alone are not "evidence". *McElmurry v. Arkansas Power & Light Co.*, 27 U.S.P.Q.2d 1129, 1131 (Fed. Cir. 1993). See also, *In re Lee*, 61 U.S.P.Q. 2d 1430 (Fed. Cir. 2002).

The fact that references relate to the same general field of endeavor is clearly not "evidence" which supports a combination of these references. There must be actual evidence of motivation to combine, not simply a conclusion that the references are combinable. *In re Lee*, 61 USPQ 2d 1430 (Fed. Cir. 2002).

Here, rather than evidence supporting the combination, the reverse is present. First, the *Schuster* and *Mathur* references are not directed to the same technological field. *Schuster* is directed to the preparation of liquid silicone rubbers ("LSR" in the industry), which

are viscous to pasty or putty-like curable compositions, used for casting operations, for example. The reactive silicones employed in such compositions have a relatively high proportion of reactive groups and a relatively low viscosity. *Mathur*, on the other hand, is directed to high temperature vulcanizable rubbers (“HTV rubber” in the trade), which are gum or solid materials, not liquid, generally containing only a small proportion of reactive groups for final crosslinking. One skilled in the art would not be motivated to combine processes directed to such different products, even though both involve the addition of filler. The characteristics of the base compositions to which the fillers are added are far too different.

Second, *Schuster* himself teaches avoiding twin screw extruders and reciprocating kneaders, replacing both of these with a chambered kneading cascade. One skilled in the art would not be motivated to add to *Schuster*’s process the very machines he attempts to avoid. *Schuster*, for example, addresses the problems with high emissions and employs a devolatization vessel to deal with these issues. A reciprocating kneader must itself be devolatized, as recognized by *Schuster*, which is why he avoids the latter and employs a devolatization chamber instead.

Third, the process of *Schuster* involves addition of prehydrophobicized filler to his liquid silicones, while *Mathur* uses untreated silica. *See*, column 1, entire column, especially lines 61 - 62. These types of fillers are diametrically opposed, and their manner of incorporation into very hydrophobic silicones is very different.

Finally, *Mathur* teaches against the use of conventional kneaders and mixers as in his Comparative Example 1, and instead employs “a first co-rotating intermeshing twin screw extruder, and compounding . . . in a second single shaft reciprocating kneader.” Column 1, line 65 to column 2, line 2.

The benefit of the present invention is that any type of filler can be employed in the HTV compositions. In *Schuster*, for example, only pre-hydrophobicized fillers can be used. Applicants have surprisingly discovered that non-prehydrophobicized (i.e. hydrophilic)

fillers can be used in their process. As is well known to the skilled artisan, hydrophilic fillers are notoriously different to uniformly incorporate into the very hydrophobic organopolysiloxanes. Yet Applicants' process incorporates such fillers exceedingly well, thus avoiding the necessity of using the much more expensive hydrophobic fillers.

One skilled in the art is also aware of the very great differences between use of liquid organopolysiloxanes and organopolysiloxane rubbers and gums. Due to their low viscosity, liquid organopolysiloxanes readily hydrophobicize hydrophilic silica by wetting the hydrophilic, silanol-functional silica surfaces. On the other hand, the very highly viscous rubbers and gums do not have any appreciable wetting action, which is why incorporation of hydrophilic fillers into them is generally not attempted.

From the above discussion, it is clear that there is no motivation to combine *Schuster* with *Mathur*. While both pertain to incorporating fillers, the compositions the fillers are incorporated into are far different, and are recognized by the art to be different. Moreover, both *Schuster* and *Mathur* teach against the combination. Thus, rather than there being evidence supporting the combination of these references, the references themselves teach against their combination. *Dembiczak* and other Federal Circuit cases require "clear and particular" evidence supporting the combination. Here, there is no supportive evidence, rather there is evidence which clearly and particularly motivates the skilled worker away from the combination.


The benefits of the use of the combination of the transverse kneading chambers and the reciprocating kneader which follows thereafter are illustrated by Example 1, employing a kneading cascade and reciprocating kneader, from which a first comparative product (C1) is taken at the exit of the kneading cascade and an inventive product (Example 2) is taken at the output of the reciprocating kneader, with Comparative Examples C3 and C4 which employ only a reciprocating kneader, Example C3 with partial recycle, and Example C4 without any recycle.

The Examples show that neither a kneading cascade as taught by *Schuster* nor a reciprocating kneader, even with recycle, are capable of producing an HTV rubber product of the quality achieved by Applicants' process. This process is both surprising and unexpected, in particular as *Schuster* teaches against the use of single screw reciprocating kneaders.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Respectfully submitted,

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